



Aromatic Plant Research Center

We provide uncompromising
quality control for your products.

Customer : doTERRA International
Lot Number : 231652
Date Filled : 06/14/2023

Column : ZB5 (60 m length × 0.25 mm inner diameter × 0.25 µm film thickness)
Instrument : Shimadzu GCMS-QP2010 Ultra
Carrier gas : Helium 80 psi
Temperature ramp : 2 degrees celsius per minute up to 260-degrees celsius
Split ratio : 30:1
Sample preparation : 5%w/v solution with Dichloromethane.



Comments:

The analysis of this Douglas Fir lot revealed no contaminants or adulteration.
The sample meets the expected chemical profile for authentic essential oils of *Pseudotsuga menziesii*.

Analysied by : Ambika Poudel
Reviewed by : Dr. Prabodh Satyal



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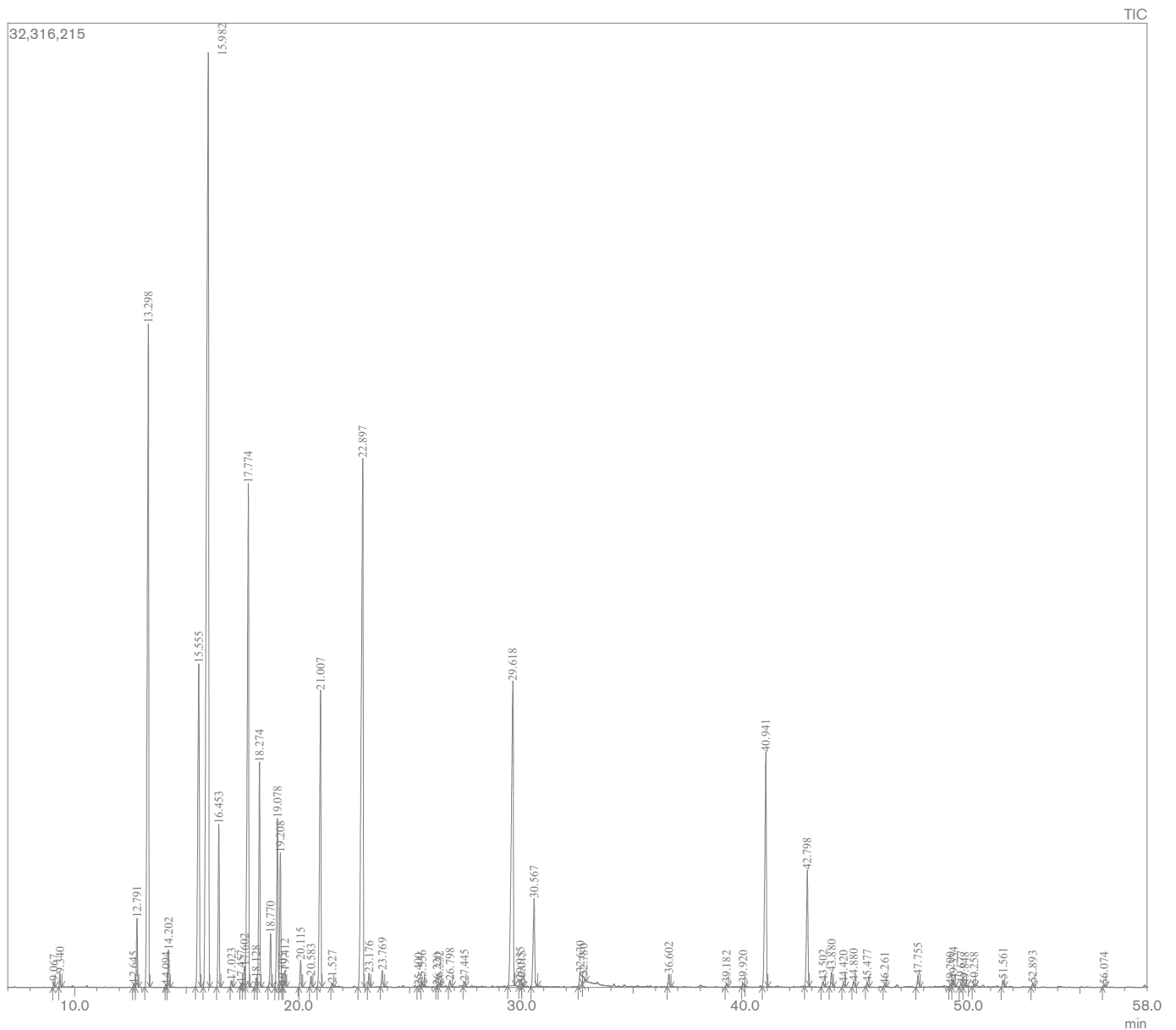
Douglas Fir Essential Oil

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Chromatogram



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Peak Report

Peak#	R.Time	Name	Area%
1	9.067	Ethyl 2-methyl butyrate	0.06
2	9.340	3-cis-Hexenol	0.14
3	12.645	Tricyclene	0.04
4	12.791	alpha-Thujene	0.86
5	13.298	alpha-Pinene	11.56
6	14.094	alpha-Fenchene	0.03
7	14.202	Camphene	0.46
8	15.555	Sabinene	6.21
9	15.982	beta-Pinene	24.27
10	16.453	Myrcene	2.13
11	17.023	Ethyl hexanoate	0.09
12	17.457	Hexenyl acetate	0.05
13	17.602	alpha-Phellandrene	0.34
14	17.774	delta-3-Carene	9.01
15	18.128	1,4-Cineole	0.13
16	18.274	alpha-Terpinene	3.15
17	18.770	para-Cymene	0.75
18	19.078	Limonene	2.64
19	19.208	beta-Phellandrene	1.77
20	19.305	1,8-Cineole	0.02
21	19.412	cis-beta-Ocimene	0.22
22	20.115	trans-beta-Ocimene	0.36
23	20.583	2,29-Trimethyl-cis-dioxospiroonane[4,4]	0.15
24	21.007	gamma-Terpinene	4.91
25	21.527	2,29-Trimethyl-trans-dioxospiroonane[4,4]	0.06
26	22.897	Terpinolene	11.95
27	23.176	para-Cymenene	0.19
28	23.769	Linalool	0.24
29	25.400	Methyl octanoate	0.02
30	25.556	cis-para-Menth-2-en-1-ol	0.06
31	26.220	1(7),3,8-ortho-Menthatriene	0.02
32	26.332	Terpin-3-en-1-ol	0.05
33	26.798	Epoxy terpinolene+trans-para-Menth-2-en-1-ol	0.10
34	27.445	Citronellal	0.07
35	29.618	Terpinen-4-ol	7.48
36	29.955	para-Cymen-8-ol	0.12
37	30.015	trans-beta-Ocimeneol	0.03
38	30.567	alpha-Terpineol	1.65
39	32.630	Citronellol	0.33
40	32.780	Thymol methyl ether	0.16
41	36.602	Bornyl acetate	0.20
42	39.182	Methyl decanoate	0.06
43	39.920	delta-Elemene	0.06
44	40.941	Citronellyl acetate	4.50
45	42.798	Geranyl acetate	2.01
46	43.502	beta-Elemene	0.09
47	43.880	Ethyl decanoate	0.24
48	44.420	Sibirene	0.07
49	44.880	Longifolene	0.10
50	45.477	beta-Caryophyllene	0.08
51	46.261	trans-alpha-Bergamotene	0.04
52	47.755	alpha-Humulene	0.20
53	49.200	alpha-Amorphene	0.04
54	49.334	Germacrene D	0.13
55	49.677	delta-Selinene	0.06
56	49.848	beta-Selinene	0.04
57	50.258	alpha-Selinene	0.03
58	51.561	delta-Cadinene	0.11
59	52.893	trans-alpha-Bisabolene	0.06
60	56.074	Ethyl dodecanoate	0.04
			100.00

